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Soybean Growing in North Carolina

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SOYBEAN GROWING IN NORTH CAROLINA

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North Carolina produces from 18 to 20 per cent of the soybean crop of the United States grown for all purposes including seed, hay and soiling. Approximately 19 per cent of all soybean seed is produced by North Carolina growers. The acreage planted annually in the State is now about equal to that of cowpeas and the crop from year to year is finding favor with growers in new territory.

States to the south, north and west of us are constantly looking to North Carolina farmers for their seed of this crop, especially in areas where the crop has not been previously grown. Growers in this State have an unusual opportunity in growing soybeans to meet this demand, provided they produce better seed than is produced elsewhere.

Soybeans, when handled properly, will meet the needs of our farmers more efficiently than any other of the summer growing legumes. From a small start a few years ago, this crop, because of its superior value, is now being grown by thousands of farmers in this and adjoining states.

THE GROWING PLANT

The plant forms a central root which starts from just below the surface of the ground with about the same diameter as the root stem and grows rapidly smaller to the size of the branch roots. From the upper portion of the tap-root numerous branch roots are thrown out almost horizontally, which turn down a short distance from the main roots, and from both the main and lateral roots a dense mass of fibrous roots is usually developed. The root system is not relatively extensive. Most of the roots are in the first foot of soil, but sometimes penetrate to the depth of two or three feet. On properly inoculated soil a large number of nodules develop on the tap-root. The nodules are round and vary in size from a pinhead to a pea or larger. They usually are developed very numerously on the first few inches of the tap-root beneath the surface. The stem is erect, woody, and varies in height from two to five feet. It is much branched and is covered with a heavy coating of fine hairs. The foliage is heavy and the leaves are tri-foliated in form, the leaflets of which resemble those of the cowpea. The main stem and branches are thickly covered with two to three seeded, downy, pods, which vary in

length from two to three inches. The flowers are small and
white or purplish color. They are borne in clusters of tv
four or five and are self-pollinated. The pods, when ma
split readily, and by curling throw out the seed. The seed
greatly in size, shape, and color. The most common color
cream-white, yellow, black, brown and intermediate sh
They have a long scar and are without indentation on
surface.

FIG. 1—Soybeans in rows for seed and soil improving purposes

DISTRIBUTION IN NORTH CAROLINA

This legume is grown more or less from the seashore t
western boundary, but is produced most intensively in the n
eastern part of the state. In trials that have been made i
mountains and in the upper Piedmont section of the state d
past years, it has been found that the crop does better
cowpeas. The chief reason for this is that the beans are
hardier than the peas and will continue growing much lat
the fall. The plant will stand a light frost without injury,
the cowpea will stop growing when the nights become cool
will be killed by the first frost.

SOYBEANS vs. COWPEAS

It has been found generally that soybeans are better yie
when planted in rows and cultivated than are cowpeas.
are also a more certain crop for hay and for seed purposes
are cowpeas, not only on well drained land, but also on
which are only fairly well drained.

On the black soils of the eastern portion of the state, it has been found that soybeans usually thrive whereas cowpeas meet with failure or with very poor returns at best. In sections of the state where the nights are cool during the late spring or early fall the soybeans will be found to be much better adapted to growth than are cowpeas. They may be sown earlier and will grow later in the fall than the cowpeas. This is of particular interest to those farmers whose farms are located under conditions that require crops that will thrive with cool nights and complete their growth in a comparatively short period. In most cases, the total growth produced by soybeans will be equal or larger than that produced by cowpeas. The cost in growing the two crops in rows will be practically the same or possibly a little in favor of the beans because of the ease with which the cultivations may be conducted, due to their erectness in habit of growth. Particularly is this true when compared with the varieties of cowpeas that have a strong tendency to run.

SOYBEANS COMPARED WITH PEANUTS

Soybeans have a much wider range of adaptability than do peanuts. This latter crop, like cowpeas, is not able to stand the least bit of frost. Where cool nights prevail during the late spring or early fall, peanuts will not thrive well as they are quite sensitive to cool weather. Generally speaking, peanuts do not do very well outside of the coastal plain section of the state. This does not mean that they are not grown on some of the Piedmont soils, for such is not true. It does mean, however, that as a commercial crop their greatest development is on the sandy and sandy loam soils of the eastern part of the state. The black soils, however, are not usually adapted for their growth, especially as a commercial crop.

The soybean will produce from 50 to 100 per cent better growth of vines than will peanuts when both are grown under the same conditions. Peanuts, on the other hand, will produce a larger yield of nuts in the hull than will soybeans of clean seed. Ordinarily we would expect a piece of land suited to the growth of both of these crops to yield 20 to 25 bushels of soybeans and to produce about 40 bushels of Spanish peanuts in the hull.

Soybeans are much more easily cultivated than are peanuts; especially after the first cultivation, because the vines of the peanuts are more running in their nature, and interfere with the later cultivations. The cost of harvesting peanuts is about double to triple the cost of harvesting soybeans. With a suitable machine pulled by a team of mules or horses from five to six

acres of beans may be harvested in a day, operating under fav able conditions. When such a machine is not favorable and t vines have to be cut with a mower or reaper, and be thresh out with a grain thresher, or a corn shredder, the cost will b little greater than when the beans are harvested with a regu soybean harvester. Even when harvested by this latter meth the cost need not exceed 7 or 8 cents per bushel when there i yield of 25 bushels of beans per acre. This cost would be ab double the cost of harvesting with a regular harvester.

Again, peanuts are much more exacting in their cultural quirements than are soybeans. This is particularly true w varieties of peanuts of the Virginia type. Soybeans at $2 to $3.00 per bushel are decidedly more profitable to the farm than peanuts, ranging in price from $1.40 to $2.00 per bushel

Soybeans will make much more growth per acre and, if b the beans and peanuts are inoculated, the total amount of hum and nitrogen added to the soil by a crop of soybeans will alm double the quantity added by a crop of peanuts if the vines a roots of both crops are returned to the soil. It should not inferred, however, that soybeans should replace peanuts or a other leguminous crop, for such is not the idea. There is place for all legumes that are commonly grown, but farm should know which will do best under average conditions.

SUITABLE VARIETIES OF SOYBEANS

Of the two hundred or more varieties introduced into t country from China, Japan, Manchuria, and India, probably more than a dozen are commonly grown. In North Carolina has been found by field trials that the following varieties best in the different sections for seed and hay production:

Mountains:

For Seed: Virginia, Herman, Southern Prolific and Laredo
For Hay: Laredo and Herman.

Piedmont:

For Seed: Laredo, Herman and Virginia.
For Hay: Virginia, Laredo and Herman.

Coastal Plain:

For Seed: Mammoth Yellow, Laredo, Herman, Tokyo, Bil and Otootan.

For Hay: Mammoth Yellow, Laredo, Otootan, Tokyo a Herman.

SELECTION AND PREPARATION OF SOIL

Although this crop will grow on a great variety of soils, it generally makes its best growth on mellow, fertile loams and silts. Soybeans do fairly well on sandy soils, especially those containing some lime. Swampy and peaty soils, after being drained and limed, also produce a good crop. The more favorable the soil the larger the development of the plant while the yield of seed is comparatively small. On poor soils the production of forage will be relatively small in comparison with seed. This is true, to a considerable extent, however, with many other crops. For best development, soybeans require a well drained soil, but they are able to stand more water in the soil than either corn or cowpeas after growth has begun. Under no circumstances, however, should the seed be sown on soil which is saturated with water for a great portion of the year, or on those which are inclined to bake. Soybeans will grow on soils too poor to grow the clovers, but will not do as well on these soils as will cowpeas. Thorough preparation of the land is essential for best results. Early breaking should be deep and should be followed by a thorough disking or harrowing. The seedbed should be fairly compact underneath without being hard and the surface soil for three or four inches should be loose and mellow. All clods should be crushed and weeds and grass destroyed.

INOCULATION ESSENTIAL

Soybeans, like other legumes, are characterized by their ability to take free nitrogen from the air, if the soil is inoculated with the proper bacteria for this crop. In growing soybeans on land for the first time, especially in a locality where this crop has not been grown previously, it will pay to inoculate the soil by either using soil from an inoculated field or one of the commercial cultures. The latter may now be secured at very reasonable prices. In some parts of the state I would say, however, that the bacteria suitable for inoculating this crop seem to be quite widely distributed in the soil. When soybeans are planted on many soils, it will usually be found that nodules are present on the roots in large numbers by natural inoculation. Experiments have shown that something like 50 per cent more nitrogen was found in the stems and leaves of soybeans which were planted on inoculated soil than in those grown on uninoculated soil.

KINDS OF FERTILIZER TO USE

As soybeans on inoculated soil will be able largely to gather their nitrogen from the atmosphere, it will not be necessary to add but little, if any, commercial nitrogen. However, if the

soil is poor it will pay to make an application of barn-y manure or add sufficient cotton-seed meal, nitrate of soda, s phate of ammonia, or other commercial carriers of nitrogen give the fertilizer mixture 1 to 2 per cent nitrogen. Ordinar from 200 to 300 pounds of 16 per cent acid phosphate and to 50 pounds of muriate of potash will supply the necess amount of phosphoric acid and potash needed by this crop w grown on average soils in the eastern part of the state. acid phosphate alone will be sufficient to add on average soils the piedmont and mountain sections. With poor soils, 25 to pounds of nitrate of soda or sulphate of ammonia per acre supply sufficient nitrogen if the crop is inoculated.

SEEDING AND CULTIVATION

Soybeans may be seeded broadcast with a drill or they may put in in rows. Where sown for hay, soiling, or grazing, t may be broadcast or be put in with a grain drill at the rate of 1½ bushels per acre. If grown for seed, they should be plan in rows 30 to 40 inches apart, putting about one-half bushel seed per acre and using a corn or bean planter. The pla should average 2 to 4 inches apart in the row. In planting, seed should be covered from 1 to 1½ inches deep with a plan that does not compact the surface. When soybeans are plan deep they are more subject to failure of stand than most any our other crops. The planting should not take place until land is fairly warm, a good time being just after the late c planting. They may, however, be sown earlier than the cowp When sown in rows, the cultivation should be shallow, especi after the first, and should be sufficiently thorough and frequent keep down grass and weeds and to maintain a good dust mul

ROTATIONS WITH SOYBEANS

Soybeans are particularly valuable in short rotations w corn, cotton, and small grains. The latter are removed in ti for the soybeans to be planted so as to make a complete gro before frost. This is especially true in the Piedmont and Coas Plain sections of the state. This crop may be used in place cowpeas in almost any rotation which the farmer wishes adopt. They fit into a rotation for the central and eastern pa of this state as would red clover in the mountain section.

Good suggestive rotations in which soybeans may be used North Carolina farmers are as follows:

For Coastal Plain Soils

1. First year: corn, followed by crimson clover, or rye, or both.
Second year: soybeans after crimson clover has been cut for hay.

2. First year: corn with soybeans in the corn.
Second year: cotton, followed by crimson clover.
Third year: peanuts, followed by rye or oats.

3. First year: corn, followed by oats and vetch.
Second year: oats and vetch, followed by soybeans.
Third year: cotton, followed by crimson clover.

For Piedmont Soils

1. First year: corn, soybeans sown in the middles or planted in the rows with the corn.

Second year: cotton, with crimson clover sown after the first picking.

2. First year: corn, with soybeans sown in the middles, or planted in the rows with the corn, followed later by a broadcast seeding of rye.

Second year: tobacco, followed by oats.

Third year: oats, followed by soybeans, in turn followed by crimson clover sown during the early fall.

For Mountain Section

1. First year: corn, followed by crimson clover sown in the fall.
Second year: crimson clover, followed by soybeans for hay, the soybeans in turn being followed by crimson clover which is to be plowed in in the spring for corn.

2. First year: corn, followed by crimson clover sown during the fall.
Second year: crimson clover, followed by soybeans, which are in turn followed by oats.
Third year: oats, followed by soybeans.

3. First year: corn, followed by crimson clover.
Second year: crimson clover, followed by soybeans, and in turn followed by fall seeding of wheat or oats.
Third year: red clover, sown during the early spring on wheat or oats.
Fourth year: red clover for hay, the last growth being turned into the soil during the fall.

SOYBEANS IN MIXTURES

Field experiments have demonstrated that this crop does v
when sown in mixtures with sweet sorghum or millet. By s
ing with these crops, the yield of hay is increased and the prot
of the soybean balances the carbohydrates of the sorghum a
millet.

When sown with corn, a part of the crop may be used eit
for silage or for pasturage.

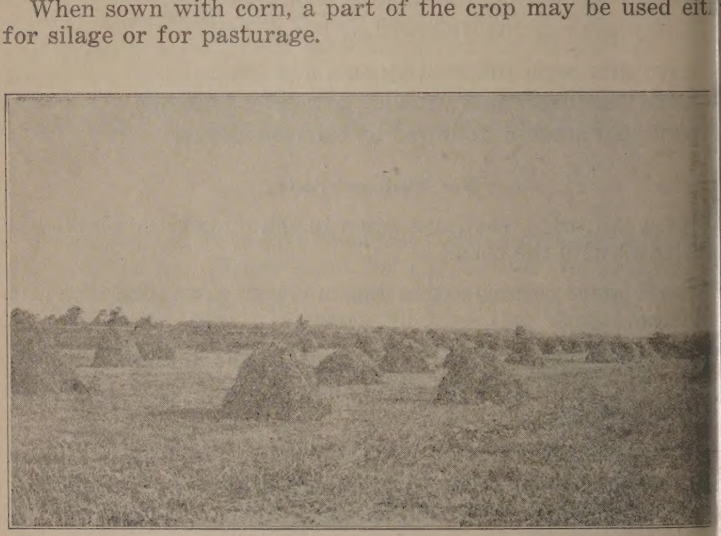

FIG. 2—Soybean hay being cured in cocks

HARVESTING FOR HAY

The harvesting should take place after the pods have form
and filled, but before they are fully grown. If left until the p
are fully ripe the beans will shatter out badly, the leaves
fall off, and the stems will become too woody for best hay. Th
is a rapid decline in the feeding value of the stems as the pla
approach maturity. In cutting, an ordinary mowing mach
with side delivery attachment or self-rake reaper may gener
be used with very satisfactory results. The vines should
cured in the swath, windrow, and cock, as is generally done w
cowpeas, exercising care that the vines be exposed to direct s
light as little as possible after they have wilted in the swa
This precaution should be observed in order to prevent
leaves from falling off. After wilting, rake into windrows a
there allow to remain for a day or two, after which, if
weather has been favorable, they may go into cocks or piles a

capped. In good weather they may go into the barn after aining in the cocks for about a week.

n curing, the best results are secured by the use of curing mes. These should be so constructed as to admit of a thor- h ventilation of air through the center of the pile. The s should be relatively high in proportion to their diameter. ery precaution should be taken in curing to save the leaves, ich are the most valuable parts of the plant for feeding pur- es.

FIG. 3—A field of soybeans ready to be harvested for seed

HARVESTING FOR SEED

The best time to harvest for seed is when about three-quarters the leaves have fallen and most of the pods are ripe, but be- re they have dried out too much and begun to pop out. If the ds are left to get completely ripe, they will burst open in tting and the seed will scatter out on the ground. This is suming that the vines are to be cut and threshed. However, the seed are to be harvested with one of the commercial bean rvesters the seed will have to be thoroughly ripe before the achine is put in the field.

When the plants are to be sent through a thresher later they ould be cut when they are slightly moist with dew. The cut- g can be done with an ordinary mowing machine with side- livery adjustment, or with a self-rake reaper or binder. Where e acreage is small, the plants are pulled or cut with a scythe sickle. The threshing may be done with a flail, pea-huller, or

with grain threshing machines after some simple adjustme have been made. It will be an advantage to have a slight d on the plants before attempting to handle in threshing, as t splitting and shattering of the seed will thereby be materia lessened. Threshing should be done, if possible, in the fie and with as little handling of the vines as conditions will perm

Soybeans will ordinarily produce much more seed per a than do cowpeas. From 15 to 30 bushels per acre are genera

FIG. 4—Harvesting soybean seed in the field with a harvester

secured, the average ranking from 18 to 25 bushels when t beans are grown under favorable conditions. As the seed sp easily if at all damp they should not be stored in bulk af threshing. They should be put in loosely woven bags that v admit a free circulation of air through them, or else be spre in a thin layer over the barn floor. The seed of the soybe unlike those of the cowpea, are rarely attacked by weevil other grain insects.

SOYBEANS FOR SOIL IMPROVEMENT

Soybeans possess very high value for soil improving purpos but do not leave the soil in as good condition when removed do cowpeas and the clovers. It has been estimated that the va

the fertilizing constituents attained in a crop of soybeans plied to the soil as green manure is $2.44 per ton. As from to ten tons of the green matter will be produced per acre, it l be seen what value this crop possesses for soil improvement. ybean hay, on an average, contains 2.48 per cent of nitrogen, 0 per cent phosphoric acid, and 1.32 per cent potash, which at commercial prices of these constituents usually prevailing in state would make the fertilizing value of a ton of soybean hay 1.64. Soybean seed contain 5.30 per cent nitrogen, 1.87 per

FIG. 5—One way of harvesting soybeans

nt phosphoric acid, and 1.99 per cent potash. When the same luations are assigned to these constituents that have to be id for them in commercial fertilizers, each bushel of soybeans ill be found to contain 75 cents worth of fertility.

Because of its wide adaptation and ease of growth, the soyan is the most dependable of all the summer growing legumes r North Carolina farmers in all sections.

SOYBEANS FOR SOILING PURPOSES

The importance of the soybean as a soiling crop is becoming ore generally recognized by stockmen and dairymen. They ive a high feeding value and generally produce good results hen fed properly. By planting at different dates, a succession green forage may be provided for six to eight weeks during

the latter part of the summer and early fall. When the cr has become well established, it grows well during drought a may come on when other crops have wilted and died. For soili purposes they have been found to be superior to a mixture oats and some other crops. Planted on good soil, ten tons green, rich feed should be secured per acre. If desired, this cr may be put into the silo. For this purpose it is generally co bined with corn, as it does not seem to do well when put in t silo alone because of a tendency to ferment. When mixed wi corn this trouble does not develop. In putting soybeans in the silo, they should be arranged in alternate layers with so crop like corn, making the corn layers double thickness. F silage, the plants should be cut as soon as the pods are w developed, but before they are ripe. For soiling purposes, t cutting should begin at flowering and may continue until t pods are three-quarters grown.

SOYBEANS FOR PASTURAGE

This crop is rich in protein and is particularly suited f pasturing hogs, especially so when the beans are grown for s improvement. When the plants are young and tender, the ho will practically eat the whole of the plant, but after they becon mature they will not be eaten so readily. By planting the sa variety at different dates, or by using varieties with differe oates of maturity, the grazing may be extended over a consi erable period. The grazing, however, should not begin un after the pods have formed. The chief objection to the soybea as a pasturage crop is that the plants, soon after maturity, beg to drop their leaves. Although this crop is chiefly used f pasturing hogs, other kinds of livestock may be pastured on the if desired.

A very common practice with farmers of this state is to tu hogs, cattle and workstock into the field after the soybeans ha been harvested or into those fields in which the soybeans a grown in the corn. By this method much valuable feed a cheap gains are secured.

HOW SOYBEAN CROP IS UTILIZED

According to the most reliable information available of t total acreage in soybeans in the United States for the yea 1922, 1923 and 1924, 28 per cent was used for seed, 46 per ce for hay, and 26 per cent for grazing. In the older producir states, like North Carolina, 47 per cent was used for seed, 2 per cent for hay and 24 per cent for grazing during the sa period. Ten other southern states producing soybeans harveste

y a little more than 15 per cent of the total crop for the pro-tion of seed.

These facts may mean that growers of North Carolina, the est commercial seed-producing state in the Union, are not lizing the crop as largely as they should for hay and grazing poses; or on the other hand it may indicate that those mers with most experience in the growing and handling of s crop have learned that for best returns they should handle nething near fifty per cent of their total acreage of this crop seed production and soil improvement. It would appear that latter interpretation is probably most in harmony with all facts.

COST OF GROWING THE BEANS

Although there is a wide range in cost of production in dif-rent parts of the country, as well as between different farmers the same section, yet under good farming conditions in any ality the expenses of growing and harvesting the beans for d purposes will usually run from $1.20 to $1.50 or more per shel. Of course when the beans are grown in rows between ws of corn, or as a second crop in rows after small grain or sh potatoes, as is done to some extent in some parts of the te, the total expense of production will be materially cut. nerally, the total expenses of production and harvesting, ere a harvester is used and where very little or no fertilizer applied and the yield is as high as 15 bushels per acre, will be 0.00 per acre, which will give an average net cost of about 35 per bushel. It should be kept in mind that there will be t to the credit of the farm an additional value from their owth, if the beans are well inoculated, of about $8.00 for added rogen for each ton of organic material produced. This should main on the land when the beans are harvested. There will o be added to the soil from one and a half to two tons of ganic matter, which will have no inconsiderable value in itself the soil.

CRUSHING BEANS FROM STANDPOINT OF MILLMEN

Although other sections of the country may in cases offer portunity for crushing beans from the standpoint of the llmen, yet the cotton oil mills of the South would appear to the most logical places at which this operation may be done st cheaply and thereby afford largest returns to operators d best prices to growers.

These mills seldom have more than enough cotton-seed in ck to operate more than five to six months a year at full pacity. If by crushing beans, they can give their help employ-

ment for a greater part of the year than they are at prese doing, and at the same time make a small profit, it would appe to be the most logical thing for them to do. The crushing beans could be more generally used to lengthen the operati season, give a small profit and possibly aid in bearing a certa part of the annual overhead expenses. Because of these fac and to the further fact that cotton oil mills may change ov from the crushing of cotton seed to the crushing of soybea with the same machinery with a negligible expense for t change, it would appear that these mills scattered through the southern states could find it to their advantage to cru soybeans especially where they are favorably located.

In those sections of the country where cotton is not grown a where there may be a considerable surplus of beans beyond the needed for planting purposes, special factories might be built manufacture specialized products from the beans. The gre difficulty these latter types of factories might have to overcon would be to secure enough beans at reasonable prices to have sufficient operating season to justify capital putting money in such enterprises.

CRUSHING BEANS FROM THE STANDPOINT OF FARMERS

From the standpoint of growers, the crushing of soybeans, the light of what has taken place in the price of cotton se since the establishment of the cotton oil mills, is to be encou aged, provided the oil mills can and will pay a sufficient price f farmers' beans to justify them in growing them for this pu pose. The oil millmen by handling the surplus beans wou materially aid farmers from suffering from great surplus beans during any one season.

As it is hardly possible for farmers, under average conditio to grow the beans for less than about $1.35 per bushel, th should at least be able to receive prices above this amount f their beans.

PRODUCTS SECURED BY OIL MILLS IN CRUSHING

From a ton of soybeans, oil mills have secured from 30 to gallons of oil and about 1,650 pounds of meal with an avera loss from cleaning and from evaporation of moisture in the mi ing of about 110 pounds per ton of beans.

Oil.—The amount of oil present in soybeans ranges from to 22 per cent, the average being about 19 per cent. The o when expressed from good sound beans, is practically neut and about 95 per cent of it is saponfiable. It contains chie the glycerides of the fatty acids. These acids are made up

out 15 per cent palmitic, 56 per cent oleic, 19 per cent lenolic, l 5 per cent lenolenic acids. The presence of the unsaturated ds (oleic, lenolic, and lenolenic) impart drying properties to oil. The oil, although more efficient in drying properties n the oil from cottonseed, is less so than is linseed oil. It is ssed among the semi-drying oils.

In a bushel of Mammoth yellow soybeans, one of the most nmonly grown varieties in North Carolina, there is ordinarily ntained about 11 pounds or 1.42 gallons of oil, weighing 7.72 unds per gallon. Oil mills at present are able, by expression thods, to get out only about 70 per cent of the total amount oil contained in the beans. By the use of appropriate sol- nts, such as gasoline, practically all of the oil might be re- oved. This method of extraction, however, has never gained uch headway in this country as a means of extracting oil from tonseed, and it will probably be some time, if ever, before its e becomes general as a commercial method with either cotton- ed or soybeans. From an economic standpoint, the method ost commonly used with cottonseed by southern oil mills will ost likely be the one that will be most generally practiced in ybean-oil extraction. At present, those mills that have appar- tly been most successful in manufacturing oil and meal from ybeans are those which are equipped with expellers or screw esses.

Meal.—Soybean meal is one of the most concentrated of feeds, containing usually from 47 to 50 per cent protein, 5 to 7 per nt fat, 27 to 30 per cent nitrogen-free extract, 4 to 6 per cent ude fiber and 5 to 6 per cent ash. It is palatable and most nds of livestock readily learn to relish it. The meal is a more ncentrated and valuable feed than the beans themselves.

This meal, like cottonseed meal, contains considerable amounts fertilizing constituents. On an average it will contain from 5 to 8 per cent nitrogen, 1.36 to 1.50 per cent phosphoric acid, d 1.80 to 2.15 per cent potash, all of which is in available forms r fertilizing crops.

WHAT CAN OIL MILLS AFFORD TO PAY FOR BEANS?

During the past season, several thousand bushels have been ught and presumably crushed by a few cotton oil mills in stern North Carolina. These beans have cost the crushers the way from 75 cents to $1.60 a bushel. From all the facts ailable, it would appear that when oil is bringing as much as cents a pound net and meal is selling for from $40.00 to 5.00 per ton, oil mills could very well afford to pay growers minimum net price of $1.40 to $1.50 per bushel for their beans.

It is realized, of course, that as the prices of oil and meal a vance or decline it will affect the prices oil mills can afford pay farmers for their beans.

Although the above price for beans would not give as lar annual net cash returns per acre to farmers as possibly wou be afforded by some other crops in some years, yet it wou appear that their growth for seed might be well justified growers could be assured of at least the minimum price for the beans. Of course, as the manufacturing of the soybeans a their crude products advanced and high priced products were manufactured for use as human food for new uses in the industries the prices which the beans shou command in the markets would in all probability be somewh increased.

POSSIBILITIES AS INDICATED BY IMPORTANT USES OF SOYBEAN PRODUCTS

As these will probably have an important bearing on t farmers price for beans, the possibilities of the future use of t two soybean products, oil and meal, produced by the crushi of soybeans may be appreciated by noting the places in whi each of these have already found important places both in ag culture and in the industries.

Uses for Soybean Oil.—If one will study the statistics bearin on the consumption of vegetable oils in this country for the pa quarter of a century, it will be found that they have steadi grown in favor and use until in 1925, according to the da supplied by the Bureau of Census, the consumption of vegetab oils was almost 3.6 times that of the consumption of edib animal fats. Of the vegetable oils, that produced from soybea has met with marked favor and usefulness, especially duri the past decade. In the light of these facts, it would seem sa to assume that only a beginning in the development of its pos bilities in these directions has been made.

As an average for five years, there was imported annual into this country almost 21,000,000 pounds of soybean oil, whi was a little more than four-fifths of the average consumption this oil.

Uses for Soybean Meal.—The meal secured from crushing t beans is a most valuable product and has the widest usefulnes The soybean meal secured by expression methods, has a pleasa taste, not unlike malted milk, and when ground into meal used chiefly for feeding and fertilizing purposes. The meal a feed is highly concentrated and nutritious, and all kinds stock seem to relish it. It should not be fed in large quantiti

r any great length of time, because of its highly concentrated ture. As a fertilizing material it has been found to act very tisfactorily in the production of crops.

Since the meal after special fabrication has special dietetic lue as human food for invalids because of its concentrated ture and very low starch content, it has been used in a limited ay for this purpose and no doubt its usefulness in this direc- n will gradually be extended until the amount of meal annually quired for this purpose will be a considerable tonnage.

OME ADVANTAGES TO FARMERS OF SOYBEANS OVER OTHER OIL-BEARING SEED CROPS

Based upon statistics for 1924, soybeans next to flax seed 37 lbs.) produced the largest amount of oil (86 lbs.) per acre three major oil-producing crops grown in the United States, cotton only produces on an average of about 50 pounds. The rcentage of meal secured from a ton of beans is, too, higher, nd it is richer in feed nutrients than is that secured either from axseed or cottonseed.

One of the greatest advantages which soybeans as a crop has ver other common domestic oil-bearing seed crops is that soy- ans are a fairly disease and insect resistant legume, and if roper precautions are observed in their growth and handling fter maturity, they may be used as a material aid in increasing ne nitrogen supply and productiveness of the land. This is not either in the case of the cotton or flax crop.